Title: A SYSTEM AND METHOD FOR THE DETECTION OF A TERRORIST THREAT

Abstract: This invention relates to a system for the detection of a terrorist threat. The system comprises a control centre computer and a plurality of nomadic, remote mobile sensors. The control centre computer has a communications module for communication with each of the plurality of remote mobile sensors. The remote mobile sensors each comprise a communication module, a location module, a hazardous material sensor for detection of a hazardous material in its vicinity, and means responsive to the hazardous material sensor to transmit an alert to the control centre computer. The remote mobile sensors are each incorporated into a portable radio handset for an emergency services personnel. In this way, the sensor network will be more reliable and likely to detect terrorist threats. Accordingly, appropriate counter-measures can be taken against the terrorist threat as the sensor network will be more widespread and more difficult to elude.

**Declarations under Rule 4.17:**

— as to the identity of the inventor (Rule 4.17(i))
— as to applicant’s entitlement to apply for and be granted a patent (Rule 4.17(ii))
— of inventorship (Rule 4.17(iv))

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— of applicant’s entitlement to apply for and be granted a patent (Rule 4.17(H))
— of inventorship (Rule 4.17(iv))
Title of Invention:

"A system and method for the detection of a terrorist threat"

Technical Field:

This invention relates to a system and method for the detection of a terrorist threat.

Background Art:

It is a sad fact that terrorism and terrorist acts would appear to be becoming more frequent. Due to the openness of many countries' borders and the ease with which extremists are able to source materials to make an explosive device, it is becoming increasingly difficult for law enforcement agencies to prevent these atrocities. Indeed, it is said that there are openly accessible websites that provide instructions to the uninitiated on how to construct a viable explosive device. Therefore, the number of terrorists that pose a realistic, potentially devastating threat has increased exponentially. It is practically impossible to identify and monitor each of these threats and tragically, many terrorists have been successful in bringing devastation to civilised society.

One of the greatest fears of the authorities in the United States in particular is that a terrorist organisation will be able to detonate either a nuclear weapon or a so-called "dirty bomb" in one of their more populous cities. The potential devastation of such a heinous act is almost incomprehensible. Despite tight security controls at the ports, airports and other points of entry, it is widely acknowledged that if a terrorist organisation were to attempt to smuggle in such a device, there is a good chance that they would be successful in getting it into the country.

Various measures have already been taken in one of the most populous cities in the United States to detect passage of radioactive materials into the city. In New York, there are a number of fixed sensors mounted on a number of the bridges and tunnels into the city to detect whether or not radioactive materials are being transported over the bridge or through the tunnel. If radioactive materials are detected, an alert is issued.
Although the present measures go some way to detecting the presence of a terrorist threat, it is believed that these measures could be circumvented with relative ease by a terrorist organisation. It has been well publicised that there are radioactivity sensors on the bridges and tunnels and therefore the terrorists know the location of the sensors and the places to avoid. It is likely that the terrorist will take an alternative route into the city, of which there are many.

Various systems and methods have been proposed to overcome the problems with purely fixed sensor based systems. One such system is that proposed in US2008/0255431, in the name of Erad et al. Another such system is that disclosed in US2007/0018806 in the name of Craig et al. A third system is that described in US2009/0012745 in the name of Longman. Erad, Craig and Longman propose providing a cellular telephone with a mobile sensor for use in the detection of hazardous materials or hazardous environmental conditions. However, there are problems with each of the proposed solutions.

It is an object of the present invention to provide a system for the detection of a terrorist threat and a method of detecting a terrorist threat that overcome at least some of the problems with the known systems and methods. It is a further object of the invention to provide a method and system that will increase the likelihood of detecting a terrorist threat and that is harder for a terrorist to circumvent. It is a further still object of the present invention to provide a system and method that offer a useful alternative choice to the consumer.

Summary of Invention:

According to the invention there is provided a system for the detection of a terrorist threat comprising a control centre computer and a plurality of nomadic, remote mobile sensors; the control centre computer having a communications module for communication with each of the plurality of remote mobile sensors; and the remote mobile sensors each being incorporated into a portable radio handset of an emergency services personnel, the remote mobile sensors each comprising a communications module for communication with the control centre computer, a location module for determining the location of the remote mobile sensor, a hazardous material sensor for
detection of a hazardous material in the vicinity of the hazardous material sensor, and
means responsive to the hazardous material sensor detecting a hazardous material to
cause the remote mobile sensor's communication module to transmit an alert to the
control centre computer.

By having such a system, the plurality of remote, nomadic mobile sensors will create a
sensor network that will be constantly moving instead of being in one or more fixed
locations. Such a sensor network is more likely to detect hazardous materials that have
been smuggled into a city by terrorists with the intention of causing serious harm to
others. There are numerous emergency services personnel including, but not limited to,
police officers, fire services personnel and paramedics, that are dispersed throughout a
city at any given time of day or night and they tend to move in a quasi-random fashion.
Therefore, the network of sensors will be cast wide and will be highly unpredictable in its
movement, thereby making evasion of the remote mobile sensor net highly improbable.
The chances of a terrorist transporting hazardous materials coming into proximity of a
sensor will be increased significantly. The system therefore provides a further degree of
protection against a terrorist threat.

Importantly, practically all emergency services personnel, regardless of job, are provided
with a radio communication device that is normally used for communication with a
dispatcher in a control centre. In this way, the remote mobile sensor can piggyback on
the communication module of the radio communications device and a separate
communications module capable of relatively long range communications will not have to
be provided. By having such a system for the detection of a terrorist threat, and in
particular by incorporating the remote mobile sensor into the portable radio handset of
an emergency services personnel, the system will be more robust than the existing
systems and will be less likely to fail in times of emergency. This is due in part to the fact
that the system according to the present invention is not dependent on a cellular
communications network to operate but instead can operate using the radio network
already in use for communications to and from the portable radio handset. The remote
mobile sensors will effectively have uncontended bandwidth to operate and it is possible
in such radio networks to prioritize data communications should traffic increase above
acceptable levels, thereby ensuring that the data is relayed to the control centre at all
times. As a result, the system will be more reliable and effective in operation.
In one embodiment of the invention, there is provided a system for the detection of a terrorist threat in which the hazardous material sensor of the remote mobile sensor is incorporated into a remote speaker microphone of the portable radio handset of the emergency services personnel. This is seen as a particularly preferred embodiment of the present invention. By having the hazardous material sensor housed in the remote speaker microphone of the portable radio handset, the hazardous material sensor is always likely to be worn outside the garments worn by the emergency services personnel unlike a cellular telephone which will usually be carried in a pocket. The sensor will be located in a position where it is likely to be unobstructed and therefore more effective at detecting non-radioactive hazardous materials. In this position, the sensor is ideally located for detecting hazardous materials. This in turn will lead to a mobile sensor, and by extension a system and method, that is more effective in operation and more likely to detect hazardous materials.

In one embodiment of the invention there is provided a system for the detection of a terrorist threat in which the remote mobile sensor is incorporated into a remote speaker microphone of the portable radio handset of the emergency services personnel. Instead of having only the hazardous material sensor located in the remote speaker microphone, the entire remote mobile sensor unit may be located in the remote speaker microphone. In this way, the remote speaker microphone unit with the remote mobile sensor housed therein may be retrofitted to some existing models of portable radio handsets. Furthermore, the remote mobile sensor can be mounted in the remote speaker microphone with relative ease and with little disruption to the existing equipment thereby facilitating incorporation of the mobile sensor into existing equipment casings during manufacture obviating the need to re-tool the remote speaker microphone casing.

In one embodiment of the invention there is provided a system for the detection of a terrorist threat in which the alert comprises the type of hazardous material detected. This is seen as a useful aspect of the invention as the seriousness of the threat can be determined. Furthermore, false alarms can be avoided by determining the nature of the materials in question and investigating whether or not there are legitimate reasons for those materials being transported in the city at that time or being in a given location. The present invention is deemed particularly suitable for the detection of radioactive threats.
In one embodiment of the invention, there is provided a system for the detection of a terrorist threat in which the alert comprises the location of the remote mobile sensor at the time of detecting the hazardous material. By providing the exact location of the remote mobile sensor at the time of detection, the location of the hazardous material can be determined with a high degree of certainty and also tracking of the movement, if appropriate, of the hazardous materials to identify potential targets is also made possible.

In one embodiment of the invention there is provided a system for the detection of a terrorist threat in which the location module comprises a global positioning system (GPS) module. A GPS module may already be provided in the communications device of the emergency services personnel and a second GPS module may be unnecessary thereby reducing the cost of manufacture and complexity of the device. The advantage of using GPS is the accuracy of the location information and the ready availability of an accurate, synchronized time clock. As alternatives to a GPS module, Wi-Fi® and/or cell tower positioning techniques could be used as the location module once suitable hardware is provided on the mobile sensor.

In one embodiment of the invention there is provided a system for the detection of a terrorist threat in which the alert comprises the exact time of detecting the hazardous material taken from the GPS module. The synchronized GPS time will be a simple way of having all of the remote mobile sensors synchronized and therefore the movement of hazardous materials can be tracked with accuracy as they move through the sensor network.

In one embodiment of the invention, there is provided a system for the detection of a terrorist threat in which the control centre computer has mapping software loaded thereon. This is seen as a useful aspect of the present invention as the individuals in charge of monitoring the threat will be able to plot the location of the hazardous materials, determine areas of particular concern nearby (such as schools, office blocks, stadia and the like) and determine an appropriate response based on the location and the resources available to them nearby.
In one embodiment of the invention there is provided a system for the detection of a terrorist threat in which there is provided a database accessible by the control centre computer for storage of at least one or more of sensed hazardous material data, remote mobile sensor location data, remote mobile sensor sampling time data, and identification of the emergency services personnel associated with the remote mobile sensor. This database will allow for better evaluation of threats through statistical analysis. It will also in certain implementations allow for monitoring of emergency personnel exposure to hazardous materials over prolonged periods of time. Furthermore, by having a database of this information and of the samples taken by the remote mobile sensors, the control computer will be able to closely track and demonstrate the movement and location of hazardous materials over time and assist in the prevention of terrorist threats.

According to the invention there is provided a method of detecting a terrorist threat in a system comprising a control centre computer and a plurality of nomadic, remote mobile sensors; the control centre computer having a communications module for communication with each of the plurality of remote mobile sensors; and the remote mobile sensors each being incorporated into a portable radio handset of an emergency services personnel, the remote mobile sensors each comprising a communication module for communication with the control centre computer, a location module for determining the location of the remote mobile sensor, a hazardous material sensor for detection of a hazardous material in the vicinity of the hazardous material sensor, and means responsive to the hazardous material sensor detecting a hazardous material to cause the remote mobile sensor's communication module to transmit an alert to the control centre computer, the method comprising the steps of: allowing the plurality of nomadic, remote mobile sensors to roam within a defined geographical boundary; and receiving, at a control centre computer, an alert from at least one of the remote mobile sensors that it has detected a hazardous material in its vicinity and the location of that remote mobile sensor at the time of detection of the hazardous material.

In one embodiment of the invention, there is provided a method of detecting a terrorist threat in which the method comprises the initial step of issuing the emergency services personnel with the portable radio handset having a remote speaker microphone, the remote speaker microphone containing the hazardous material sensor of the remote mobile sensor.
In one embodiment of the invention there is provided a method of detecting a terrorist threat in which the method comprises the initial step of issuing the emergency services personnel with the portable radio handset having a remote speaker microphone, the remote speaker microphone containing the remote mobile sensor.

In one embodiment of the invention there is provided a method of detecting a terrorist threat in which the method further comprises the step of mapping the location of that remote mobile sensor at the time of detection of the hazardous material on the control centre computer.

In one embodiment of the invention, there is provided a method of detecting a terrorist threat in which the method further comprises the step of the remote mobile sensor detecting the type of hazardous material.

According to the invention there is provided a portable radio handset for an emergency services personnel, the portable radio handset comprising a mobile sensor, the mobile sensor comprising a communication module for communication with a remote control centre computer, a location module for determining the location of the mobile sensor, a hazardous material sensor for detection of a hazardous material in the vicinity of the hazardous material sensor, and means responsive to the hazardous material sensor detecting a hazardous material to cause the mobile sensor's communication module to transmit an alert to the remote control centre computer.

In one embodiment of the invention there is provided a portable radio handset in which the portable radio handset comprises a remote speaker microphone, the remote speaker microphone housing the hazardous material sensor of the mobile sensor.

In one embodiment of the invention, there is provided a portable radio handset in which the portable radio handset comprises a remote speaker microphone, the remote speaker microphone housing the mobile sensor.

According to the invention there is provided a remote speaker microphone for use in conjunction with a portable radio handset of an emergency services personnel, the remote speaker microphone comprising a hazardous material sensor.
Brief Description of the Drawings:

The invention will now be more clearly understood from the following description of some embodiments thereof given by way of example only with reference to the accompanying drawings, in which:

Figure 1 is a diagrammatic representation of a system for the detection of a terrorist threat according to the invention;

Figure 2 is a diagrammatic representation of an emergency services personnel carrying a remote mobile sensor about their person; and

Figure 3 is a diagrammatic representation of the graphical user interface of a mapping software program utilised in a control centre computer.

Detailed Description of the Drawings:

Referring to Figure 1, there is shown a system for the detection of a terrorist threat, indicated generally by the reference numeral 1, comprising a control centre computer 3 and a plurality of remote, nomadic mobile sensors 5. The control centre computer 3 has a communications module 7 for communication with each of the plurality of remote mobile sensors 5 over a communication network 9 and there is provided an accessible database 10. The remote mobile sensors 5 each comprise a communication module 11 for communication with the control centre computer 3, a location module, in this case a GPS module 13 for determining the location of the remote mobile sensor 5, a hazardous material sensor 15 for detection of a hazardous material in the vicinity of the hazardous material sensor, and means 17 responsive to the hazardous material sensor detecting a hazardous material to cause the communication module 11 to transmit an alert to the control centre computer 3.

The means 17 responsive to the hazardous material sensor may comprise a processor, a microprocessor, or other miniaturized computing device that is capable of detecting the signal from the hazardous material sensor 15 and thereafter instructing the communication module 11 to transmit a communication to the control centre computer.
The means 17 will be understood to include communication channels (wired or wireless) to and from the hazardous material sensor 15 and the communication module 11. The hazardous material sensor may be a sensor capable of detecting one specific type of hazardous material, such as a radioactive material, or may be capable of detecting two or more different types of hazardous materials including one or more of the following: radioactive materials, certain hazardous chemicals (in solid, liquid and/or gas form), biological weapons, explosive materials or other hazardous materials.

In use, when a hazardous material that is detectable by the hazardous material sensor comes in the vicinity of the hazardous material sensor 15, the hazardous material sensor will indicate the presence of the hazardous material. This indication may be by emitting a sound, emitting light, increasing or decreasing an electrical current in an electrical circuit or changing some characteristic in some other way to demonstrate that there is a hazardous material nearby. This may be done in a seemingly unobtrusive manner so as not to alert the terrorists to the fact that the hazardous materials have been detected. The signal is detected by the means 17 responsive to the hazardous material sensor which instructs the communication module 11 to transmit an alert to the remote control centre computer 3. Ideally, the alert will indicate the precise location of the hazardous material sensor when it detected the hazardous material, the precise time that it detected the hazardous material, and if the sensor is capable of detecting multiple types of hazardous material and distinguishing between those different types of hazardous material, the type of hazardous material detected.

This alert will be received by the communication module 7 of the control centre computer which in turn will store the information contained in the alert in the accessible database 10 and will pass the alert to the mapping software on the control centre computer which will map the location of the hazardous material threat on a map of a defined geographical boundary. If the hazardous material is mobile and is being moved through the area and is sensed by multiple hazardous material sensors, the location of the hazardous materials over time will be plotted on the map. This will enable tracking of the hazardous materials and also will allow identification of potential targets and be useful for planning counter-terrorism measures and, for example, evacuation procedures. The person or persons in charge of the control centre computer 3 can then co-ordinate the personnel at their disposal to take the appropriate counter-measures to hopefully avoid
loss of human life and ideally prevent the act of terrorism. These personnel at their
disposal may be members of the armed forces, police officers, Special Weapons and
Tactics (SWAT) teams, bomb disposal experts, civil defence forces and other personnel
that may be involved in an evacuation procedure such as public citizens and members of
the media.

Referring to Figure 2, there is shown a diagrammatic representation of an emergency
services personnel 21 carrying a remote mobile sensor 5 about their person. It can be
seen that the emergency services personnel 21 is provided with a communication
device, in this case a portable radio handset 23 that in turn comprises a master unit 25
and a remote speaker microphone 27. The remote mobile sensor 5 is mounted in the
remote speaker microphone 27 of the portable radio handset where it will be ideally
positioned for detection of many types of hazardous materials. Alternatively, the
hazardous material sensor (not shown) could be mounted in the remote speaker
microphone and one or more of the remaining components that form the remote mobile
sensor 5 may be located in the master unit of the portable radio handset 23.

Referring to Figure 3, there is shown a diagrammatic representation of the graphical user
interface (GUI) 31 of a mapping software program utilised in a control centre computer.
The graphical user interface has an icon 33 indicative of the location of each of the
remote mobile sensors 5 and a second type of icon 35 distinguishable from the first icon
33 that identifies the location of those remote mobile sensors 5 that have detected a
hazardous material. It is envisaged that various useful information could be
superimposed on the GUI such as the location of monuments and places of interest
(which are often the target of terrorist attacks), the potential blast radius, the population
density, the location of resources at the disposal of the person operating the control
centre computer as well as the precise nature of those resources.

It is envisaged that the present invention, if a terrorist strike has already occurred (such
as by air attack), may also be useful in the subsequent relief effort. For example, if a dirty
bomb were detonated in the middle of a city, the control centre computer may receive
radiation readings from the remote, nomadic mobile sensors 5 and the GUI 31 may
display the level of radiation in certain areas 37, 39 in a manner similar to a temperature
map on a weather chart with areas 37, 39 of a certain radiation level being joined and
coloured the same. Furthermore, the exposure of certain emergency personnel carrying a mobile sensor can be closely monitored.

It will be understood that various modifications could be made to the embodiments hereinbefore described without departing from the spirit of the invention. For example, the remote mobile sensors could be provided in other equipment as well as the portable radio handsets carried by emergency services personnel. For example, the remote mobile sensors could also be provided in a squad car and may, if desired, be in communication with the radio or other communication unit in the car to allow communication of an alert with the control centre computer through the cars existing equipment. A number of fixed sensors could also be incorporated into the system to support the network of remote nomadic mobile sensors.

Throughout the specification, radio communications have been described in connection with the implementation of the invention as these are ubiquitous in emergency services communication systems and are understood. However, other communication methodologies could be used as well as the radio communications of the portable radio handset in which the mobile sensor is housed such as, but not limited to, wireless internet communications, SMS messaging, MMS messaging and the like. The remote mobile measurement sensors 5 may be Wi-Fi ® enabled, Bluetooth ® enabled, ZigBee ® enabled or otherwise enabled to carry out relatively short range communications and those communications could be transferred onwards through a communications network to the control centre computer 3.

In addition to the foregoing, reference has been made throughout the specification to the mobile sensors having a hazardous material sensor that can detect a hazardous material in the "vicinity" of the hazardous material sensor. It will be understood that what constitutes the "vicinity" of sensor, or in other words the range of the hazardous material sensor, will depend on a number of factors including, but not limited to, the sensor design, the power available to the sensor, the hazardous material being sensed, the nature of the material being sensed and the level of accuracy required/acceptable margin for error. Similarly, the range of the sensor used to detect multiple different types of hazardous material may be different for different materials. Therefore, the range of the mobile sensor's hazardous material sensor and what constitutes in the "vicinity" of the
hazardous material sensor will be determined in part through design choices and the limitations of the individual hazardous material sensors. It is envisaged that “vicinity” would in some cases be considered to be a range of approximately 50 meters, in some cases more and in other cases less. Furthermore, the data from the mobile sensor may be processed and analysed using cloud computing or similar techniques, part of which may entail statistical analysis techniques being applied to the mobile sensor data to improve accuracy and/or detection efficiency of the mobile sensor.

In addition to detecting terrorist threats, it will be understood that the present invention may also be used to detect other radioactive materials that are not intended for use in a terrorist threat but that would present a threat to public health and safety. Similarly, the mobile sensors and system could be configured to detect narcotics and the by-products of narcotics manufacture.

It will be understood that the method according to the present invention will be performed largely in software and therefore the present invention extends also to computer programs, on or in a carrier, comprising program instructions for causing a computer to carry out steps of the method, in particular the mapping steps by the control centre computer and the transmission of the alert by the remote, mobile sensors. The computer program may be in source code format, object code format or a format intermediate source code and object code. The computer program may be stored on or in a carrier, in other words a computer program product, including any computer readable medium, including but not limited to a floppy disc, a CD, a DVD, a memory stick, a tape, a RAM, a ROM, a PROM, an EPROM or a hardware circuit. In certain circumstances, a transmissible carrier such as a carrier signal when transmitted either wirelessly and/or through wire and/or cable could carry the computer program in which cases the wire and/or cable constitute the carrier.

It will be further understood that the present invention may be performed on two, three or more machines with certain parts of the computer-implemented method being performed by one machine and other parts of the computer-implemented method being performed by another device. For example, the control centre computer may be several devices each of which performs similar or disparate tasks in the overall process of monitoring the location of the hazardous material sensors. The control centre computer devices may be
part of a LAN, WLAN or could be connected together over a communications network including but not limited to the internet.

Many of the method steps could be performed "in the cloud", meaning that remotely located processing power may be utilised to process certain method steps of the present invention. This may be particularly the case for modelling of potential damage limitation scenarios and blast radius damage predictions which can be computationally expensive. Accordingly, it will be understood that many of the method steps may be performed remotely, by which it is meant that the method steps could be performed either on a separate machine in the same locality or jurisdiction or indeed on a separate machine or machines in one or several remote jurisdictions. For example, the control centre computer may be in one jurisdiction whereas the remote mobile sensors could be in another jurisdiction. The present invention and claims are intended to also cover those instances where the method is performed across two or more machines or pieces of apparatus located in one or more jurisdictions and those situations where the parts of the system are spread out over one or more jurisdictions.

In this specification the terms "include, includes, included and including" and the terms "comprise, comprises, comprised and comprising" are all deemed totally interchangeable and should be afforded the widest possible interpretation.

The invention is in no way limited to the embodiment hereinbefore described but may be varied in both construction and detail within the scope of the appended claims.
Claims:

1. A system for the detection of a terrorist threat (1) comprising a control centre computer (3) and a plurality of nomadic, remote mobile sensors (5); the control centre computer having a communications module (7) for communication with each of the plurality of remote mobile sensors; and the remote mobile sensors (5) each being incorporated into a portable radio handset (23) of an emergency services personnel, the remote mobile sensors (5) each comprising a communication module (11) for communication with the control centre computer (3), a location module (13) for determining the location of the remote mobile sensor, a hazardous material sensor (15) for detection of a hazardous material in the vicinity of the hazardous material sensor, and means (17) responsive to the hazardous material sensor detecting a hazardous material to cause the remote mobile sensor's communication module (11) to transmit an alert to the control centre computer.

2. A system for the detection of a terrorist threat (1) as claimed in claim 1 in which the hazardous material sensor (15) of the remote mobile sensor is incorporated into a remote speaker microphone (27) of the portable radio handset (23) of the emergency services personnel.

3. A system for the detection of a terrorist threat (1) as claimed in claim 1 in which the remote mobile sensor (5) is incorporated into a remote speaker microphone (27) of the portable radio handset (23) of the emergency services personnel.

4. A system for the detection of a terrorist threat (1) as claimed in any preceding claim in which the alert comprises the type of hazardous material detected.

5. A system for the detection of a terrorist threat (1) as claimed in any preceding claim in which the alert comprises the location of the remote mobile sensor (5) at the time of detecting the hazardous material.
(6) A system for the detection of a terrorist threat (1) as claimed in any preceding claim in which the location module (13) comprises a global positioning system (GPS) module.

(7) A system for the detection of a terrorist threat (1) as claimed in claim 6 in which the alert comprises the exact time of detecting the hazardous material taken from the GPS module.

(8) A system for the detection of a terrorist threat (1) as claimed in any preceding claim in which the control centre computer has mapping software loaded thereon.

(9) A system for the detection of a terrorist threat (1) as claimed in any preceding claim in which there is provided a database (10) accessible by the control centre computer (3) for storage of at least one or more of sensed hazardous material data, remote mobile sensor (5) location data, remote mobile sensor (5) sampling time data, and identification of the emergency services personnel associated with the remote mobile sensor.

(10) A method of detecting a terrorist threat in a system (1) comprising a control centre computer (3) and a plurality of nomadic, remote mobile sensors (5); the control centre computer (3) having a communications module (7) for communication with each of the plurality of remote mobile sensors; and the remote mobile sensors (5) each being incorporated into a portable radio handset (23) of an emergency services personnel, the remote mobile sensors each comprising a communication module (11) for communication with the control centre computer, a location module (13) for determining the location of the remote mobile sensor, a hazardous material sensor (15) for detection of a hazardous material in the vicinity of the hazardous material sensor, and means (17) responsive to the hazardous material sensor detecting a hazardous material to cause the remote mobile sensor's communication module to transmit an alert to the control centre computer, the method comprising the steps of: allowing the plurality of nomadic, remote mobile sensors (5) to roam within a defined geographical boundary; and receiving, at a control centre computer (3), an alert from at least one of the remote mobile sensors (5) that it has detected a
hazardous material in its vicinity and the location of that remote mobile sensor at the time of detection of the hazardous material.

(11) A method of detecting a terrorist threat as claimed in claim 10 in which the method comprises the initial step of issuing the emergency services personnel with the portable radio handset (23) having a remote speaker microphone (27), the remote speaker microphone containing the hazardous material sensor (15) of the remote mobile sensor (5).

(12) A method of detecting a terrorist threat as claimed in claims 10 or 11 in which the method comprises the initial step of issuing the emergency services personnel with the portable radio handset (23) having a remote speaker microphone (27) containing the remote mobile sensor.

(13) A method of detecting a terrorist threat as claimed in claims 10 to 12 in which the method further comprises the step of mapping the location of that remote mobile sensor (5) at the time of detection of the hazardous material on the control centre computer (3).

(14) A method of detecting a terrorist threat as claimed in claims 10 to 13 in which the method further comprises the step of the remote mobile sensor (5) detecting the type of hazardous material.

(15) A portable radio handset (23) for an emergency services personnel, the portable radio handset comprising a mobile sensor (5), the mobile sensor (5) comprising a communication module (11) for communication with a remote control centre computer, a location module (13) for determining the location of the mobile sensor, a hazardous material sensor (15) for detection of a hazardous material in the vicinity of the hazardous material sensor, and means (17) responsive to the hazardous material sensor detecting a hazardous material to cause the mobile sensor's (5) communication module (11) to transmit an alert to the remote control centre computer (3).
(16) A portable radio handset (23) as claimed in claim 15 in which the portable radio handset comprises a remote speaker microphone (27), the remote speaker microphone housing the hazardous material sensor (15) of the mobile sensor.

(17) A portable radio handset (23) as claimed in claim 15 in which the portable radio handset comprises a remote speaker microphone (27), the remote speaker microphone housing the mobile sensor (5).

(18) A remote speaker microphone (27) for use in conjunction with a portable radio handset of an emergency services personnel, the remote speaker microphone comprising a hazardous material sensor.
**INTERNATIONAL SEARCH REPORT**

**A. CLASSIFICATION OF SUBJECT MATTER**

<table>
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<th>INV.</th>
<th>G08B21/12</th>
<th>G08B25/10</th>
<th>G08B25/00</th>
<th>G08B25/01</th>
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**ADD.**

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

G08B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

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<th>Category*</th>
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<th>Relevant to claim No.</th>
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[X] Further documents are listed in the continuation of Box C.  
[ ] See patent family annex.

* Special categories of cited documents:
  * "A" document defining the general state of the art which is not considered to be of particular relevance
  * "E" earlier application or patent but published on or after the international filing date
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  * "P" document published prior to the international filing date but later than the priority date claimed

*T later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underpinning the invention

*X document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

*Y document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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**Date of the actual completion of the international search**

19 May 2014

**Date of mailing of the international search report**

18/06/2014

**Name and mailing address of the ISA/ Authorized officer**

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